

Integrated Testbed for Environmental Analysis of NextGen Concepts using ACES

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Proposal No.: A3.02-8211, Phase II extension

Identification and Significance of Innovation

The key innovation in this effort is the development of an integrator that allows seamless performance-environmental analysis of new aviation concepts. The integrator will seamlessly merge performance models such as the Airspace Concepts Evaluation System (ACES) with aviation environmental effects models, such as the Aviation Environmental Design Toolkit (AEDT), to provide a “360-degree” evaluation of new operational concepts. The testbed will be demonstrated in the phase II extension through two 360-degree analyses: one involving interval management and the other involving NASA’s System Oriented Runway Management (SORM) concept.

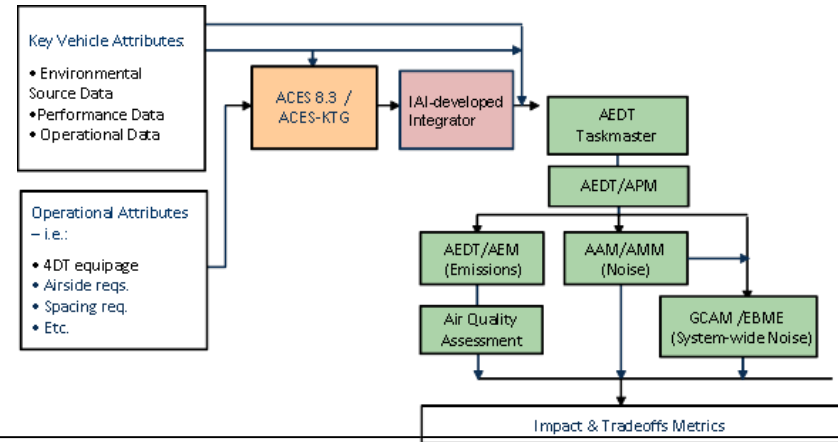
TRL 3 at project inception, TRL 4 at end.

Technical Objectives and Work Plan

- Demonstrate the utility of the combined performance-environmental analyses by investigating two concepts, time-based and distance-based interval management and System Oriented Runway Management (SORM).
- Verify and validate the results through discussions with subject matter experts and NASA personnel as well as comparisons with similar analyses.
- Publicize the existence of the combined performance-environmental product to enhance commercialization opportunities.

Work Plan:

The work plan is divided into two main tasks, each corresponding to the two analyses that will be undertaken. In each analysis, the tasks consist of the following: define the experimental plan; gather data; configure the performance (ACES) and environmental models (AEDT); test the model configuration; execute the production runs; verify that the production runs produce valid results; analyze the results; and write a final report and presentation to NASA personnel.



NASA and Non-NASA Applications

Potential applications include NASA, the FAA, and industrial companies whose business it is to do either environmental assessment or performance analysis. They would use this capability to develop an integrated picture of the performance and environmental assessment of future proposed projects. Potentially, all airports with planned improvements, all large metroplexes (approximately fourteen) with planned system upgrades, and all air traffic control centers are customers.

Firm Contacts

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